

1. A ventilator, comprising;  
a primary electronic ventilator subsystem,  
a backup pneumatic ventilator subsystem,  
said backup pneumatic ventilator subsystem being  
5 inoperative during primary electronic ventilator  
operation,

said backup pneumatic ventilator subsystem being  
operable during primary electronic ventilator subsystem  
failure.

10 2. The ventilator of claim 1, wherein said  
backup pneumatic ventilator subsystem further comprises  
parameter tracking valves, said parameter tracking  
valves being adjusted during primary electronic  
ventilator subsystem operation and maintaining said  
15 adjustments during said backup pneumatic ventilator  
subsystem operation.

3. The ventilator of claim 2, wherein a first  
parameter tracking valve is provided for maintaining  
continuous positive airway pressure, during backup  
20 pneumatic ventilator subsystem operation, at the level  
provided during primary electronic ventilator operation.

4. The ventilator of claim 1, wherein a second  
parameter tracking valve is provided for maintaining  
tidal volume, during backup pneumatic ventilator  
25 subsystem operation, at the level provided during  
primary electronic ventilator operation.

5. The ventilator of claim 1, further  
comprising a lockout mechanism to prevent operation of

said backup pneumatic ventilator subsystem during initial power up of said primary electronic ventilator subsystem.

5           6.       The ventilator of claim 5, wherein said lockout mechanism is a parameter tracking valve.

10           7.       A ventilator, comprising;  
              an electronically driven flow control valve,  
              a microprocessor for controlling said electronically driven flow control valve,  
              a first pneumatically driven control valve,  
              a first pneumatically driven timing unit for controlling said pneumatically driven control valve,  
              wherein said electronically driven flow control valve operates at a first time, and  
15                wherein said first pneumatically driven control valve operates at a second time.

20           8.       The ventilator of claim 7, further comprising an electronically set flow control valve connected to said first pneumatically driven control valve.

              9.       The ventilator of claim 8, wherein said electronically set flow control valve is set during operation of said electronically driven flow control valve.

25           10.       The ventilator of claim 7, wherein said electronically driven flow control valve can be operated to provide ventilation in a plurality of ventilatory modes.

11. The ventilator of claim 7, further comprising;

a second pneumatically driven control valve,  
a second pneumatically driven timing unit for  
controlling said pneumatically driven control valve.

12. A ventilator, comprising:

a primary ventilator subsystem,  
a supply valve operating in a plurality of modes,  
a back-up ventilator subsystem, comprising;  
a pneumatically operated valve,  
a timing unit coupled to the pneumatically  
operated valve for activating the pneumatically  
operated valve, and  
a flow rate control device connected to the  
pneumatically operated valve for receiving an  
output from said pneumatically operated valve,  
wherein said supply valve provides a supply to  
the primary ventilator subsystem under a first set of  
operating conditions, and  
wherein the supply valve provides a supply to the  
back-up ventilator subsystem under a second set of  
operating conditions.

13. A ventilator, comprising:

a ventilation flow rate control device;  
a controller for adjusting the ventilation flow  
rate control device;  
wherein the controller can be operated in a first  
mode to adjust the ventilation flow rate control device  
to provide ventilation in a first set of ventilatory  
modes;

wherein the controller can be operated in a second mode to adjust the ventilation flow rate control device to provide ventilation in a second set of ventilatory modes.

5           14.     The ventilator of claim 13, wherein the first set of ventilatory modes is a subset of the second set of ventilatory modes.

10           15.     The ventilator of claim 14, wherein said first ventilatory mode includes synchronized intermittent mandatory ventilation with continuous positive airway pressure.

          16.     The ventilator of claim 15, wherein said second ventilatory mode includes controlled mechanical ventilation.

15           17.     The ventilator of claim 15, wherein said second ventilation mode includes controlled mechanical ventilation with positive end expiratory pressure.

20           18.     The ventilator of claim 15, wherein said second ventilation mode includes continuous positive airway pressure.

          19.     The ventilator of claim 15, wherein said second ventilation mode includes synchronized intermittent mandatory ventilation.

25           20.     The ventilator of claim 15, wherein said second ventilation mode includes synchronized

intermittent mandatory ventilation with continuous positive airway pressure.

5           21.     The ventilator of claim 15, wherein said second ventilation mode includes pressure support ventilation.

10           22.     The ventilator of claim 15, wherein said second ventilation mode includes synchronized intermittent mandatory ventilation with continuous positive airway pressure and pressure support ventilation.

          23.     The ventilator of claim 15, wherein said second ventilation mode includes pressure controlled ventilation.

15           24.     The ventilator of claim 15, wherein said second ventilation mode includes pressure controlled ventilation with continuous positive airway pressure.

          25.     A method of operating a ventilator, comprising the steps of:

20               providing ventilation, in one instance, in one of a first set of ventilatory modes;

              disabling at least one ventilatory mode of said second set of ventilatory modes to create a first set of ventilatory modes;

25               providing ventilation, in a second instance, in one of said second set of ventilatory modes.

          26.     The method of claim 25, wherein said first ventilatory mode includes synchronized intermittent

mandatory ventilation with continuous positive airway pressure.

5        27.        The method of claim 26, wherein said second ventilatory mode includes controlled mechanical ventilation.

      28.        The method of claim 26, wherein said second ventilation mode includes controlled mechanical ventilation with positive end expiratory pressure.

10       29.        The method of claim 26, wherein said second ventilation mode includes continuous positive airway pressure.

      30.        The method of claim 26, wherein said second ventilation mode includes synchronized intermittent mandatory ventilation.

15       31.        The method of claim 26, wherein said second ventilation mode includes synchronized intermittent mandatory ventilation with continuous positive airway pressure.

20       32.        The method of claim 26, wherein said second ventilation mode includes pressure support ventilation.

      33.        The method of claim 26, wherein said second ventilation mode includes synchronized intermittent mandatory ventilation with continuous positive airway pressure and pressure support ventilation.

34. The method of claim 26, wherein said second ventilation mode includes pressure controlled ventilation.

5 35. The method of claim 26, wherein said second ventilation mode includes pressure controlled ventilation with continuous positive airway pressure.

10 36. The method of claim 26, further comprising the steps of detecting a disconnect of the ventilator from the patient, and providing intermittent bursts of gas when a disconnect is detected and the ventilator is operating in a mode providing continuous positive airway pressure.

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